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EVALUATION OF THE NINTH REVISION OF THE INTERNATIONAL CLASSIFICATION OF DISEASES

Report on a WHO Workshop

Canterbury  
1-5 September 1981



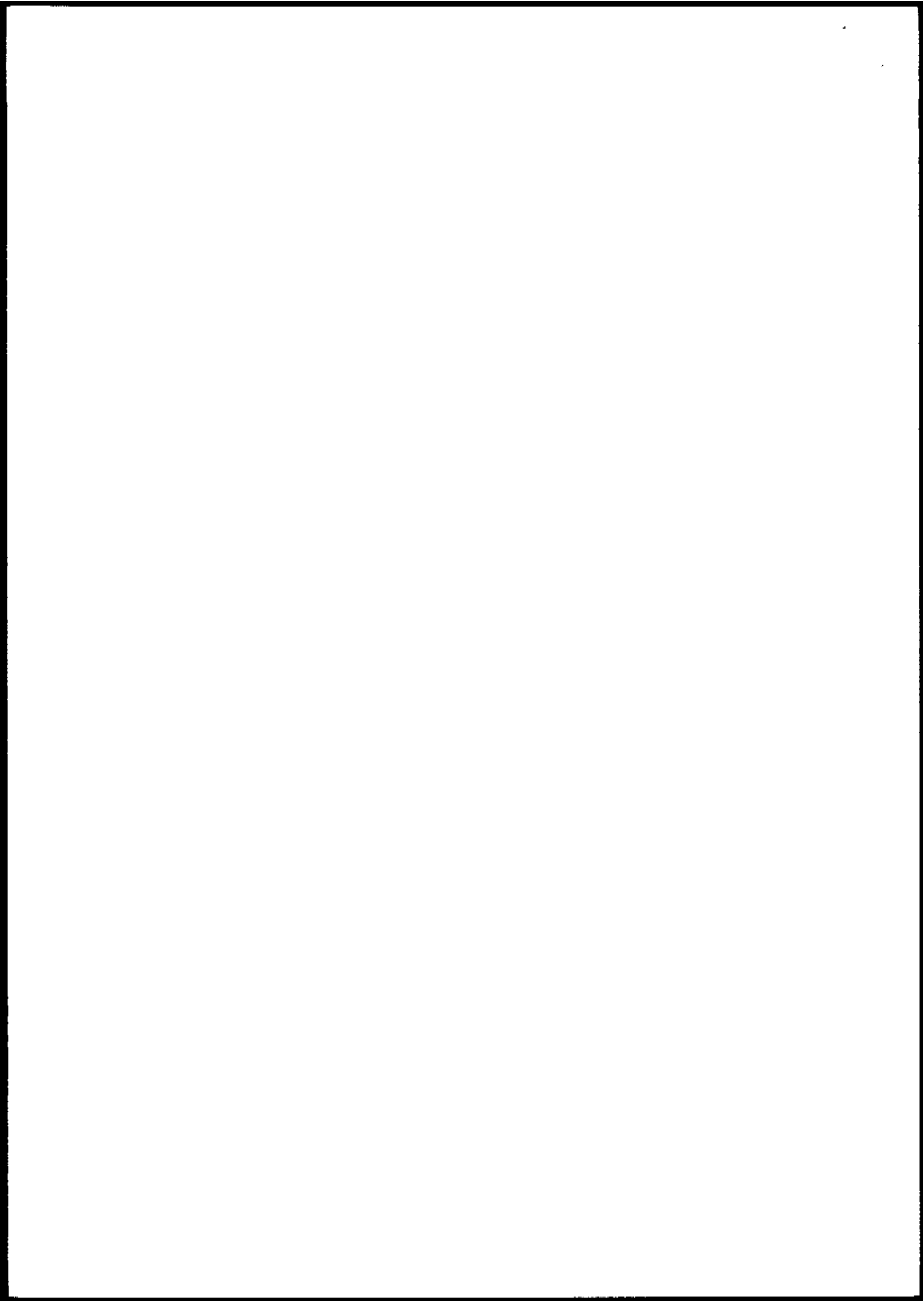
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## 1. Introduction

The meeting was convened by the WHO Regional Office for Europe in collaboration with the United Kingdom Office of Population Censuses and Surveys/WHO Centre for Classification of Diseases, which made the practical arrangements on behalf of the Regional Office for Europe. It was attended by 24 participants from 17 WHO Member States, 7 temporary advisers, 1 observer and 2 WHO staff members (see Annex II).

Dr J.P. Jardele, Acting Regional Officer for Epidemiology, opened the meeting on behalf of Dr Leo A. Kaprio, WHO Regional Director for Europe. He said that the main task of the meeting was to evaluate and identify the major problems in the use of the Ninth Revision of the International Classification of Diseases (ICD-9) in order to provide guidance concerning uniform utilization and to improve the comparability of health statistics at the international level. He invited participants to look at the use of ICD in four main areas - mortality, hospital care, cancer registries and primary health care - to identify problems and, on that basis, to formulate some first ideas concerning the main directions of future work leading to the Tenth Revision of the Classification (ICD-10).

Dr M. Alderson was elected Chairman and Miss R.M. Loy Rapporteur.

A large part of the business of the Workshop was conducted in three working groups, dealing with the use of the ICD in relation to mortality, hospital care and primary health care. The hospital care group was asked to include the needs of cancer and other disease registries in their deliberations. The reports of the working groups are attached as Annex I.

## 2. Background

Even before work on ICD-9 was completed, the heads of the WHO centres for classification of diseases met to consider what sort of classification would be needed when it came to ICD-10. WHO also convened a meeting on classification of diseases (Taormina, Italy, November 1979). This meeting considered that it was not possible to decide on the form of ICD-10 until a thorough evaluation had been made of Member States' satisfaction with ICD-9, and recommended a delay in the preparations to allow time for this to be carried out. It considered that, although certain work on the structure could be carried out in the meantime, it would not be possible for detailed work to start on ICD-10 until 1985 and that the next revision conference could not be held before 1990.

The WHO Director-General wrote to Member States early in 1981 asking whether they had any objections to the proposed delay. There were two kinds of reaction to this, though few actual objections. Some countries did not mind the delay, thereby postponing any upheaval in their data systems. Others were anxious to see ICD-10 introduced as soon as possible. The latter included the group of Nordic countries in the European Region who had decided to wait for ICD-10 before changing their data systems, considering that the advantages of ICD-9 over ICD-8 did not justify the expense and difficulties of the change. Other countries considered ICD-9 such an improvement that they wished further improvements not to be delayed.

The WHO Regional Office for Europe decided to arrange three workshops, of which this was the first, as part of the process of evaluation of ICD-9. It was expected that the workshops would consider the implications of the proposed delay besides evaluating ICD-9 and formulating ideas for ICD-10. A questionnaire, asking for reactions to the content of ICD-9, particularly to those features which were new to it, had been completed by Member States of the Region. A summary of the replies formed a working document for the Workshop.

## 3. Present state of use of ICD-9

The countries which had applied ICD-9 mostly introduced it on time for mortality; some were later in starting to use it for other applications. They seem to have a clear idea of its advantages and disadvantages in recording and coding, and some experience with the preparation of statistics, but it is too early to comment on any difficulties in the interpretation of time trends. The Nordic group of countries, who have not yet introduced ICD-9 and are in a difficult position because of the delay in ICD-10, have studied ICD-9 carefully in case they may wish to decide to introduce it.

The answers to the questionnaire showed varying degrees of satisfaction with ICD-9, depending on the type of use, the degree of experience of users, etc., but on the whole, especially where users have benefited from the WHO reorientation training programme for coders, it appears that it is being used without major difficulties.

#### 4. Discussion

##### 4.1 Purpose and timing of ICD-10

Although a variety of uses have been foreseen for ICD, its main aim is considered to be to provide a tool for comparisons, between countries at the same point in time, and within and between countries over time, in:

- statistics for decision-making in prevention of diseases;
- statistics for decision-making in health care at all levels.

It needs also to be suitable for the standardized storage and retrieval of "diagnostic" information in health records. It should promote internationally agreed terms by their inclusion in its tabular list; glossary-type definitions are an advantage where there is ambiguity. It must facilitate the production of information for decision-making in relation to the major health-related problems which will be important in the future, such as those associated with older ages, with environmental risks, with behaviour patterns and lifestyle, in all countries. The Workshop asked that WHO should produce, as soon as possible, a background document setting out the philosophy of use of disease classifications, as a guide to further development of ICD-10.

Although the Taormina meeting had suggested 1990 as the date for the ICD-10 Revision Conference, there are different views as to the desirability of that timing. Some developments of ICD, notably for primary care and for hospitals, do not necessarily involve any change in the structure of the main classification; these could be worked on immediately. It was considered that the classification became out of date when important new concepts were formulated which regarded as a group diseases which were formerly scattered in the ICD, or identified new classes of diseases which had no place in the structure. It seems that the earliest that WHO could produce a revised main classification, without change to the structure, would be 1989-1990. If a change to a "perfect" classification were envisaged, the delay would be less important, provided the new classification were carefully prepared, with adequate testing of new features, and guidance on its use, education of certifiers, etc. The year 2000 was suggested as the longest it would be possible to wait for a new classification, but there was a feeling that if the delay were too long, many countries or categories of users would implement their own revision. A consequence of this might be that ICD-10 would never appear.

##### 4.2 General considerations

###### 4.2.1 Basic framework and chapter organization of ICD

For mortality statistics, the present ICD structure and the arrangement of chapters is generally satisfactory; it has stood the test of time as a basis for statistics and there have been no clearly superior proposals. There is, however, an imbalance between the chapters - in some there is adequate room for a proper arrangement of content, while in others there are insufficient code numbers for all items which should appear at 3-digit level.

For hospital care records, although ICD-9 is generally approved, there are two basic problems. One is that the aspect of the patient's condition which is the subject of the current spell of care is not always clearly reflected in the coding and the resultant statistics. The dagger/asterisk system helps in this respect, but the fact that the dagger (etiology) code has priority is not regarded as helpful. It is suggested that new ideas for the basic structure ought not to be ruled out.

The other problem is the fact that the code-change at each revision affects a large number of people (especially coders and data processors) and causes problems in longitudinal data systems. Where this is a problem, it is felt that an adjunct to the classification itself could be a code for each medical term which could be used unchanged in the data systems and be automatically aligned with the appropriate category or short list item in successive revisions or various versions of ICD. The work of preparing this would help to clarify the nature of the whole range of data to be classified, aid the possible determination of new structures and facilitate translation.

For primary health care, the basic arrangement is in many respects applicable; development work is required before the classification can cover conditions and problems which are important as indicators for decision-making in health care at that level, in environmental improvement, and in improvement of lifestyles.

It is noted that there have been various adaptations of ICD-9 for particular applications such as oncology, general practice or Basic Tabulation List coders, or for specialties such as dentistry, paediatrics and perinatology. This suggests that for the future, a structure consisting of the basic ICD as a "core" with various "modules", derived from and compatible with it, might serve the various needs better than expecting one version of the classification to serve all users. It was stressed that there must remain "an ICD" for fear that there would be fragmentation if there were completely different classifications for each type of user; however, smaller, cheaper extracts and adaptations would be an advantage for users not requiring the full detail. There was some support for the suggestion that there might be a version for mortality which omitted mention of some conditions, categories and special features (such as symptoms and asterisk categories) which were appropriate only for morbidity records and might confuse mortality users; this was not felt to be a problem in most countries. It is felt advisable that the "modules" should be either (1) produced by or (2) coordinated by WHO. At present, information about some of the associated classifications is difficult to come by in many countries.

#### 4.2.2 Specificity

The additional specificity and the 5th digits in ICD-9 are appreciated for clinical users, who also welcome the ability to develop special applications at local level, by using extra digits. Although other users do not require such specificity, and indeed for primary health care a classification akin to a short list is probably adequate, the existence of the fully developed classification is seen as essential as an aid to understanding of the content or the categories of the more condensed versions and short lists.

#### 4.2.3 E codes; accident classification

There have been some difficulties with the use of the classification of accidents. This point needs to be looked at carefully, particularly with regard to the emphasis of the various axes of classification. Some accidents are of increasing importance, but only identifiable at the 5th digit. The E code could include additional environmental aspects which might be noted as relevant in particular patients, and might even contain a section on maternal conditions affecting the foetus, as an aid to the more precise classification of these.

#### 4.2.4 Therapeutic accidents

The ability to record information about these is appreciated, but the way in which the extra categories have been fitted into the classification causes difficulty to coders. The necessity to have to distinguish conditions recorded on death certificates as complications of surgery or of the original condition often causes difficulty for coders. This is an area for rationalization in ICD-10.

#### 4.2.5 Late effects

A number of difficulties with regard to late effects were noted, including that of definitions and terminology; the term "sequelae" might be better understood. The new categories for late effects of some infectious diseases will have moved some recording of deaths out of the more informative categories for diseases, e.g. of nervous system or psychiatric conditions. For hospitals, there is some confusion on whether the category for late effects of the original condition, or for the resultant condition, ought to be the "main diagnosis". The new "late effects" categories for injuries are less detailed than in ICD-8.

#### 4.2.6 Presumptions in ICD

Although it is recognized that the classification involves the making of presumptions when a certain aspect required for correct assignment is not stated, some changes in presumptions in ICD-9, caused by changes in the classification, have caused difficulties. An example is the presumption of site for morphological types of cancer previously assigned to "sympathetic nervous system"; these now have to be assigned to a particular site. It is felt that certifiers do not specify the site, because they expect "sympathetic nervous system" to be understood as the site; it is dangerous, as has been done in ICD-9, simply to presume that the most common site is always applicable if that is correct in, say, only 50% of cases.

#### 4.2.7 Staging of cancer

The absence of a classification for stage of cancer as part of ICD coding is seen as a deficiency now that morphology can be coded.

#### 4.2.8 Special categories for infants

Some countries were surprised at the lack of age-specific categories in ICD-9; the explanation that, deliberately, categories in ICD-9 did not depend on variables, which it is usual to classify separately, was accepted.

#### 4.3 Certification; education; guidance; coding rules

Although, strictly speaking, certifiers and other recorders of "diagnoses" do not have to know how to use ICD or its underlying-cause selection rules, it is advisable that they have some appreciation of the kind of information expected and how it will be used. Even where death certification has been in operation for many years, there are new doctors requiring guidance; many completely new projects in primary health care recording are felt to fail because of lack of motivation and understanding in the recorders.

Coding is carried out by staff at many levels of expertise ranging from coding clerks with little background knowledge to qualified medical personnel. The presentation of the classification must bear this in mind.

Reorientation training for coders for ICD-9 included a lot of general guidance on the use of the two volumes, but there is not much practical explanation in Volume 1 itself. Even such basic facts as the meaning and status of inclusion terms is not explained and can be difficult for new users to understand. A note of which parts of the classification are relevant to the various applications would be helpful.

The changes in the coding rules for mortality were generally introduced without problems. However, certain studies of use of the selection rules involving acceptability of sequences have revealed how impossible it is for coders to apply these consistently and comparably; the rules are regarded as far too complicated by new users. Since the rules are arbitrary and it is not known how often they arrive at the "truth", some research is needed into whether these complicated rules are worthwhile. The new morbidity rules present a few problems in some countries and it is felt that there are insufficient examples.

#### 4.4 Specific aspects of ICD-9

##### 4.4.1 Dagger/asterisk system

The main use of this system is for hospital care records. Most coders seem to have accepted it without great problems but its use in the presentation of statistics seems unclear. Some users regard the two codes of the dagger/asterisk combination as relating to the main diagnosis and select one or the other when presenting statistics, depending on the use. Others give priority to the dagger code, as the Manual seems to suggest, and then find this unhelpful for statistics relating to care and management. It is felt that there must be other etiology/manifestation situations not provided for. There are suggestions that other dual-aspect conditions, such as non-obstetric conditions complicating pregnancy, might also be catered for on these lines.

##### 4.4.2 Morphology code

The answers to the questionnaires seemed to suggest that in routine hospital care data systems and death certificates this item is coded only when the system is being used as a means of obtaining information for cancer registries. This was felt to be unfortunate since the morphology details are recorded on laboratory record sheets within the patient's case record and could be extracted for inclusion in routine hospital care and mortality statistics.

##### 4.4.3 Perinatal death certificates

So far, only a few countries have introduced certificates on the lines recommended in ICD-9. Some further guidance and examples for certifiers would be appreciated. The main problem in completion seems to be that placental and cord conditions are often recorded in the wrong section. Coding is straightforward if the certificate is properly completed. Having to classify maternal conditions in the few categories allocated to these in Chapter XV is considered unsatisfactory.

#### 4.5 Presentation of statistics

##### 4.5.1 Short lists

The new Basic Tabulation List and the minimum lists for mortality and hospital morbidity seem to have produced few problems in themselves. There is some confusion in data systems caused by the lack of definition of the content of residual categories which are not displayed in tabulation. There are also problems in bridge-coding tables comparing old and new short lists. It is felt these could have been avoided by more guidance in the Manual.

Most countries seem to have produced their own version of the Basic Tabulation List and although this was intended it is not seen as conducive to clarity in comparisons of countries' own data. The need for special short lists for a variety of topics was mentioned - especially perinatal, infant, etc.

##### 4.5.2 Primary health care lists

For some conditions, such as certain infectious diseases, international comparability is not seen as being of paramount importance for primary health care data, and countries should be free to list in their statistics those conditions which are of importance to them. This suggests the possibility, for primary health care, of a list containing some standard items and others which could be included only where relevant.

##### 4.5.3 Bridging between ICD-8 and ICD-9

It is questionable whether one country's data on comparability between one revision and another is applicable to any other country. Any comparability study assists in identifying the most affected categories, but it is emphasized that each country ought to carry out a study of some of its own data, coded to both ICD-8 and ICD-9. In the long run "steps" would appear in the statistics of trends over time of categories affected by the revision, but these are not immediately obvious.

#### 4.6 Definitions

There have been a number of comments about the absence of some relevant definitions from ICD-9, and some dissatisfaction with some of those which do appear. A definition of the perinatal period would be appreciated as would more guidance on the method of calculation of perinatal mortality rates. There have been some recommendations from medical groups that a viability criterion should be incorporated in the definition of live birth. In most countries, legal considerations have also to be taken into account in the recording of events on which statistics are based and in these, facts, rather than concepts such as "viability" are important. It was noted that there might be discontinuity between the new maternal mortality rate and the one previously used.

#### 4.7 Cancer and other diseases registers

No specific comments were received on the usefulness of ICD in disease registers. Some cancer registries use the International Classification of Diseases for Oncology (ICD-O) and others the main ICD-9. Some congenital malformations registers have produced booklets with explanatory material. It was felt that WHO ought to coordinate the activities of each kind of register.

#### 4.8 "Lay reporting" and "reasons for contact" classifications

##### 4.8.1 "Lay reporting"

This is seen as an important method of collection of data in the interim period before health workers, trained to the level of being able to recognize certain diseases in conventional terms, are available. In some areas, efforts are being made to align the "lay reporting" categories with certain ICD "short list" categories. This was commended, as it was felt that some conditions are obvious even to a layman, and for others a constellation of signs and symptoms could equate approximately with a diagnosis.

##### 4.8.2 "Reasons for contact"

The development of this classification was described to the Workshop. It is seen as an important part of recording at primary care level because, together with the "diagnoses", it provides data on patterns of care.

#### 5. Comments on specific chapters of ICD

A number of specific comments and recommendations on the detailed content of ICD were made both in the answers to the questionnaire and in presentations by participants of the Workshop. These have been noted for appropriate action.

Most of the changes made between ICD-8 and ICD-9, and the provision of extra specificity, are appreciated.

There are some problems in the newly constructed chapters, or sections of chapters.

In Chapter XI (complications of pregnancy, childbirth and puerperium), there is seen to be a lack of specificity in the classification of non-obstetric conditions interacting with pregnancy. The lack of ability to identify, from the diagnosis code, delivery during a spell of care is a difficulty to some users. The "normal delivery" category is too restrictive for some purposes.

In Chapter XIII there is some difficulty in knowing how to deal with the 5th digit for site when the 4-digit code indicates localization. In Chapter XV, there is seen to be lack of specificity in the categories for maternal conditions affecting the foetus or infant.

The coding of operative complications and accidents is difficult; the relevant categories are scattered and the correct one is not easy to identify.

#### 6. General evaluation

ICD-9 is a good basic document for many purposes. However, the diversity of the working groups' assessment, when focusing on the needs of each type of user, revealed that it is difficult for ICD to meet all the needs of a complete range of users. Already a number of shortened versions and adaptations have appeared for use by specific groups of user, e.g. the WONCA classification, ICHPPC-2, and the Basic Tabulation List with its own alphabetical index. The basic structure of ICD is approved for mortality but there is a feeling that the inclusion of non-disease items for other purposes makes it less clear-cut for use in mortality. Hospital-care users are unhappy that the main structure often gives precedence to the etiological aspects of conditions, which they feel is not always the main issue for hospital care conditions. They would like more flexibility, generally.

For primary health care, a finely detailed classification is irrelevant; ICD-9 meets the needs up to a point, though several important areas of concern are not dealt with adequately.

Good arguments were presented both for retaining and changing the basic structure of the classification.

All users are appreciably affected by a revision of the classification and see the need for some means of limiting the disruptive effect of changes.

ICD-9 was intended to serve many different kinds of user; however, there was a feeling common to all the working groups that clear practical guidance was lacking within the Manual on (1) which categories or parts should be used, or not used, in its different applications; and (2) how to use the Special Tabulations Lists in the presentation of statistics.

#### 7. Guidance required for ICD-9

Some of the problems encountered in the use of ICD-9 could be lessened if WHO were to issue additional guidance and examples on certain points. Items suggested were:

- explanation on the use of ICD-9 Manual in general and in specific applications;
- additional guidance for the providers of data of all kinds - investigation is needed on effective methods of bringing this point to their notice;
- comparability between ICD-8 and ICD-9 - it should be made known that the North American Center is collecting information on the comparability studies being carried out and could advise on the methods other countries are using;
- the use of Special Tabulation Lists;

- the possible use of additional tabulation lists for certain purposes, e.g. perinatal, infant and childhood mortality, hospital care, primary care;
- a list of acceptable sequences for applying mortality selection rules on the lines of the US ACME decision tables, or preferably, for manual coders, a list restricted to sequences identified as the most commonly reported;
- additional examples of the use of the morbidity selection rules;
- clarification of the code to be used for the main condition (as defined in the ICD rules) when hospital care is for sequelae of a previous disease or injury; the Workshop recommends that the nature of the sequelae should be coded as the main condition, with "Late effects of ....." as a supplementary code;
- clarification of the use of dagger/asterisk codes in the preparation of hospital care statistics for different purposes;
- the coding of therapeutic accidents and postoperative complications;
- identification of morphological types of cancer for which the index gives a site-presumption which may be incorrect in a fair proportion of cases, so that, where possible, an enquiry regarding the site can be sent to the certifier;
- encouragement of the routine recording and coding of morphology of neoplasms in mortality and hospital care;
- Clarification of maternal mortality rates produced before and after the definition in ICD-9 came into use.

#### 8. Main recommendations for ICD-10

(1) The purpose of ICD was reiterated as being to provide a tool for comparisons, between countries at the same point in time, and within and between countries over time, in statistics for decision-making in the prevention of diseases and statistics for decision-making in health care at all levels. It also has to be suitable for standardized storage and retrieval of "diagnostic" information in health records and should promote internationally agreed terminology.

##### Structure

(2) The Workshop recognized that for routine worldwide comparison of data, lists of about 150 cause-groups are all that are used in practice (although there is more specific coding for cancer incidence statistics). For national data, including comparisons between countries of their own data, lists up to approximately the level of the present ICD 3-digit list are used. Nevertheless, a comprehensive international classification needs to be developed for the main statistical users at about the level of the present 4-digit ICD. Without this finer detail, the contents of the broader groups used in tabulation are not established clearly. The detailed categories are needed within countries and only on an international level is there the expertise to develop them.

(3) The 3-digit level of the classification should contain all items required in short tabulation lists.

(4) Information needs in the future should be identified, and the classification arranged to give prominence to conditions which are indicators of progress in the prevention of disease, especially by improvement of environment and lifestyle, and those likely to be important because of association with older ages.

(5) It should be recognized that a single comprehensive classification (ICD-10) has to be prepared for the main statistical users, but cannot satisfy all needs. It should be regarded as the "core" classification and it is recommended that WHO should consider producing a "family" of classifications, with separate "modules" related to and derived from the "core" classification which would be appropriately structured and detailed for various kinds of user and specialist group. The latter would usually be smaller and cheaper and, by including only the relevant guidance, easier and clearer to use.

(6) As a background to the preparation of ICD-10, the possibility of establishing a comprehensive approved nomenclature with identification numbers for each disease entity should be

explored with the help of specialist groups. For certain data systems, this would also facilitate the allocation of the disease entities to the appropriate groups in the component classification of the ICD "family" and reallocation at the time of subsequent revision, and assist research. It would also facilitate translation.

(7) Alternative basic structures for ICD-10 are not ruled out. Those concerned with its development should remain open to new ideas.

#### Instructional material

(8) Clear guidelines on the use of the classification and appropriate rules, etc., should be prepared for each application of ICD.

(9) Better methods should be explored of motivating and educating the providers, coders and users of all types of data.

#### Timing

(10) In the timing of the revision a number of factors should be borne in mind. ICD-10 should be ready before ICD-9 becomes too badly out of date but should not be introduced without careful piloting of its development. The classification should be the best possible, in order to justify the upheaval to data systems which a change involves. The preparation of the revision in different stages is one possibility, especially as a number of different publications are envisaged. Where it is possible to base modules to meet special needs on ICD-9 (for instance, something suitable for primary health care, and perhaps something for hospitals), they could be prepared in the near future; those aspects needing a more fundamental change could be dealt with at a later date.

#### Numbering

(11) In revising ICD, thought should be given to the correction of the present imbalance in the chapters. The use of alphanumeric designations of codes might be helpful in this.

#### Detail

(12) The E code requires review to facilitate the production of statistics in the form needed. There are some additional classes of external factors relevant to disease which could be included, such as occupation, environment, lifestyle and behaviour. Maternal conditions affecting the baby could possibly be included.

(13) If the dagger/asterisk system is to be used in future, all relevant etiology/manifestation combinations should be included, and listed in the Manual and/or Index.

(14) Particular attention should be paid to clarifying:

- the coding of late effects; these should preferably be referred to as "sequelae";
- the coding of therapeutic accidents and postoperative complications;
- the definition of live birth, perinatal period and perinatal mortality rate; and
- the selection rules for both mortality and morbidity, with possible simplification of the mortality rules.

(15) Cancer registries and other registries for special care groups should use specific coding lists, compatible with the main ICD-10. Codes for staging of cancer should be incorporated in ICD. The routine use of the morphology code in hospital care data systems should be encouraged.

(16) Supplementary classifications are required for "lay reporting" and "reasons for contact with primary care" categories.

(17) It would be helpful if WHO would produce, as soon as possible, an analytical background document on the philosophy of disease classification to facilitate the development of ICD-10 and the classifications related to it.

Annex I

REPORTS OF THE WORKING GROUPS

These reports are records of the detailed discussions/conclusions of the three working groups. The groups reported back to plenary sessions of the Workshop where their views, pertinent to a specific area of use, were linked with the more general considerations regarding the totality of use of ICD.

A. Comments and recommendations in relation to mortality statistics

A.1 The working group on this subject, after identifying issues related to the uses of ICD in the coding of mortality, grouped and ordered them into three clusters, ranging from the general to the more specific.

A.2 Cluster A

A.2.1 Basic framework and chapter organization of ICD

While there have been many criticisms of the basic framework of ICD, it has stood the test of time and no clearly superior proposal has been forthcoming. The working group felt that the chapters of ICD are generally acceptable, and change for change's sake is not recommended. Note was, however, taken of an imbalance between chapters, and of problems caused by lack of unused code numbers when extension was needed for ICD-9. The discussion included mention of alternative numbering systems such as alphanumeric and 5-digit codes as possible solutions to this problem.

A.2.2 Appropriateness of the ICD in relation to mortality as modifications are introduced for other uses

As ICD becomes more useful for nonmortality applications, terms and categories are introduced which are inappropriate or undesirable for mortality, such as symptoms, nonmedical problems, reasons for contact with primary care, etc. There is no introductory explanation in Volume 1 explaining what it is, how to use it, and which parts are appropriate or inappropriate for various purposes.

A.2.3 Dagger/asterisk option

It was felt that this option in ICD-9 is not a serious problem for mortality since, for underlying-cause purposes, only dagger codes may be used. For multiple-cause coding, currently being undertaken in only a few countries, this option may or may not be used. There is a question, however, regarding the consistency of implementation of the dagger/asterisk system throughout the classification. Perhaps additional groups should be similarly identified for inclusion in the system.

A.2.4 Short lists

Many countries have difficulty with the present lists, which cause computer problems particularly because of insufficient guidance regarding residual categories. It was noted that there is no longer a special perinatal mortality list or other special lists for international comparability and time-series. The group felt that there should be minimum recommended international lists for comparability but that the old A,B,C and P lists are not the solution. It was further suggested that there be some standardization amongst lists of inclusions for given category titles.

A.2.5 Bridge coding

Each country should carry out its own comparability study between revisions with general guidance from WHO. There is some value in reviewing bridge coding results from other countries to assist in identifying the most affected categories. It was pointed out that the WHO Center for Classification of Diseases for North America will serve as a focal point of information regarding comparability studies in countries throughout the world.

#### A.2.6 Late effects

"Late effects" categories were, at the last moment, squeezed into ICD-9 after an initial attempt to remove them altogether from the classification. This resulted in adequate room being devoted to these categories. The group felt that this point needs further consideration. There was also a suggestion for use of the term "sequelae" rather than "late effects" which might be better understood by certifiers.

#### A.3 Cluster B

##### A.3.1 Therapeutic accidents

This is not a well-reported class of conditions but it is worthwhile to identify separately such causes of death when reported. However, more guidelines and examples would help in the coding.

##### A.3.2 Presumption of site for malignant neoplasms

Presumptions of site in some instances may not be fully warranted and further study of this matter should be undertaken. The group felt that a rule is needed that would proscribe presumption of site unless there is adequate evidence that a given site is highly probable.

##### A.3.3 Rules for selection of underlying cause of death

The group felt that there is reasonable question about how often the selection rules help to arrive at the "correct" underlying cause. Acceptable sequences need to be identified by coders in order to apply the selection rules and study of this has revealed very inconsistent views. It is suggested that WHO either develop a uniform manual of acceptable sequences, such as the US ACME decision tables, or identify the most commonly encountered sequences and give guidance for coding those.

##### A.3.4 Education and training for certifiers

While some countries include instructions for certifiers regarding use of ICD in medical school curricula, many do not. Better examples of correctly completed death certificates and perinatal death certificates would be helpful. It was also suggested that conferences between clinicians and pathologists would be a useful device in improving the accuracy of cause-of-death statistics.

##### A.3.5 Definitions

While the legal definition of death is an important issue, it does not have a direct bearing on cause-of-death statistics. However, recent recommendations from a number of medical groups to change the definition of live birth could have profound effects on vital and health statistics. There is considerable pressure from the medical profession to include a viability criterion in the definition. One member of the group suggested, as an alternative, the requirement of at least two signs of life; spontaneous breathing seems to be the most important of the signs. Other definitions needing further clarification include those for the perinatal period and the method of computation of the perinatal mortality rate; guidelines for these are lacking in ICD-9.

#### A.4 Cluster C

##### A.4.1 Maternal mortality rate

The inclusion of both direct and indirect maternal deaths in the calculation of the maternal mortality rate may have produced sharp discontinuities in maternal mortality rates produced before and after the introduction of ICD-9.

##### A.4.2 Special infant categories

It was pointed out that rubrics especially for deaths under 1 year of age for certain conditions have been removed in ICD-9. The group accepted the intent of the Ninth Revision which was to allow infants to be identified by tabulating deaths by age rather than allowing special age-related categories.

#### A.4.3 Perinatal death certificate

More guidance is needed in the use of this certificate, but only limited experience from a few countries is currently available. Coding is straightforward if the certificate is properly completed.

#### A.5 Recommendations in relation to mortality for ICD-9

A.5.1 WHO should encourage countries to carry out studies of comparability between ICD-8 and ICD-9 and should provide guidelines on how to do this in a useful way. WHO should encourage countries to report their activities in this area to the WHO Center for Classification of Diseases for North America, which will serve as a focal point for such information.

A.5.2 WHO should provide more guidelines and examples to help in the coding of therapeutic accidents.

A.5.3 A study should be undertaken of the reasonableness of the presumption of site for malignant neoplasms when not clearly specified, to ascertain if the certifier should be queried rather than accepting the presumption for some categories.

A.5.4 A more extensive guide for physicians, including examples of correctly completed death certificates and perinatal death certificates, should be prepared by WHO. WHO should also suggest that countries develop a method for encouraging conferences between clinicians and pathologists as a useful device for improvement of the accuracy of cause of death certificates.

A.5.5 WHO should clarify the problem of comparability of the maternal mortality rate produced before and after the introduction of ICD-9.

A.5.6 WHO should prepare a manual of acceptable sequences or identify the most commonly encountered sequences and give guidance for coding them.

#### A.6 Recommendations for ICD-10

A.6.1 Major changes in structure should not be introduced without compelling reason. Consideration should be given to finding ways to fit more categories into some chapters and to achieve a better balance in the numbering. This could perhaps be achieved by changing the numbering system including the possible use of alphanumeric characters, by rearranging chapters or preferably by developing specialized classifications as part of the ICD family.

A.6.2 The development of an international nomenclature would be helpful to facilitate agreed usage of terms. Titles of ICD rubrics should be composed of scientific terms in accepted usage both to avoid the appearance of encouraging poor terminology and to facilitate translation into other languages.

A.6.3 WHO should include a preface in Volume 1 explaining what the classification is and how to use it, and how to present statistics based on it for the various major areas of application.

A.6.4 If the dagger/asterisk option is to be included in ICD-10, a more thorough review of categories should be made to include coding of etiology and manifestation for as many categories as appropriate.

A.6.5 Special Tabulation Lists for mortality should be included in ICD-10. These should be minimum lists for international comparative purposes and for time-series. ICD should be structured so that they do not require coding below the 3-digit level. Residual categories (or their content) should be specified to facilitate adding to totals.

A.6.6 In planning ICD-10, full consideration should be given to the provision of "late effect" categories without loss of detail. WHO should consider using the term "sequelae" instead of "late effects" as being more readily understood.

A.6.7 The coding of therapeutic accidents and postoperative complications should be rationalized.

A.6.8 There should be a principle which would proscribe the presumption of site for morphological types of neoplasms, and other presumptions, unless it is highly probable that they are correct.

A.6.9 A study of the selection rules for underlying-cause coding should be undertaken to see if these help in arriving at the "correct" underlying cause of death. If possible, the results of such a study should be used to simplify the selection rules.

A.6.10 Recent recommendations regarding the definition of live birth should be looked at carefully in order to make this important concept more useful.

A.6.11 WHO should clarify, and include in ICD-10, definitions of the perinatal mortality rate. There should also be some additional guidance for dealing with the changed definition of the maternal mortality rate.

A.6.12 WHO should provide guidelines to countries on how to study comparability of statistics between ICD-9 and ICD-10.

B. Comments and recommendations in relation to hospital-care statistics

B.1 This subject was taken to cover inpatient morbidity statistics and not those such as hospital administrative statistics which do not involve the use of ICD. The working group structured its discussion under two groups of subject; general issues and particular problems.

B.2 General issues

B.2.1 Demands of clinicians and facilities of ICD-9; data banks; retrieval problems

B.2.2 A detailed nomenclature (thesaurus) might provide a much better basis for statistics. It is considered more important to define a disease and injury and the main thrust of effort for ICD-10 should be to this end. Once this is available, it would be easier to see where to go with classification. Views were expressed in favour of site (topography) as an axis of classification.

B.2.3 Cancer and other disease registers

The aims of registers and the consequent information needed for them were discussed. The bringing together of information by linkage for particular diseases, conditions, etc., is useful as a research tool and for planning, monitoring and reviewing treatment resources.

Cancer registries should be obliged to use the same classification - at present some use ICD-9 and some use ICD-10. The performance of these classifications depends on the performance of the registries themselves. Staging of cancers was discussed. It was suggested that ICD might incorporate 5th or 6th digits or supplementary codes for this purpose. There are problems of the borderline between different stages. Some of the basic data are very weak.

B.2.4 Looking beyond ICD-10

It was considered that the emphasis in the future would be on prevention of diseases. It will be important that any classification can identify specific diseases in groups of patients such as the elderly and the handicapped. The development of a thesaurus would help in this respect.

B.3 Particular problems

B.3.1 Dagger/asterisk system

This system was introduced to save the structure of ICD at a time when there was a great deal of pressure for change. It has been used with some or no difficulty and been restricted to certain specialties. A view was expressed that it was wrong to have two places for one disease. The emphasis on etiology in ICD-9 is not always helpful to hospital clinicians.

B.3.2 Optional 5th digits

These have been recommended as the solution to many problems and extension of the facility at local level has been useful.

B.3.3 Presentation of information for statistical purposes

There is only a very limited experience at the present time but the dual classification may present some problems.

B.3.4 The E code

The function of the E code was discussed. The E code is useful and important when considering prevention. The present allocation of categories and subcategories is uneven, however, and some important information, for instance on home accidents, can be demonstrated only by the use of the 5th digit.

#### B.3.5 Use of the morphology (M) code in hospitals

It appears that at present this item is not being coded unless information required for cancer registries is being picked up from routine hospital data systems. Where laboratory designation of morphology is made, the information is usually to be found in the patient's case notes, and there seems no reason why it should not be routinely transcribed and coded.

#### B.3.6 Late effects

The many difficulties associated with the recording of late effects were discussed, particularly the fact that there was uncertainty as to whether the category for late effects of the original condition or the nature of a late effect itself was to be regarded as the main diagnosis.

#### B.3.7 Short tabulation list

It seems that each country prepares its own short list, implying shortcomings in the lists provided in ICD-9.

#### B.3.8 Rules for selection of a single cause for tabulation of morbidity

The priority of the dagger (etiology) code for the main diagnosis where the principal condition treated was one to which the dagger/asterisk system applied was not considered helpful to clinicians. Manifestation is also important in medical care statistics and there are some inconsistencies in application of the coding rules as a result.

#### B.3.9 Suspected condition - not confirmed

There was discussion on whether ICD should recognize this important problem. The alternatives are to code the symptoms, nonspecific abnormal findings or the suspected disease, or to use a V code.

#### B.3.10 Multiple fractures

There has been some disquiet at the removal in ICD-9 of categories for specific combinations of fractures and the recommendation that the separate fractures should each be coded. This seems the best procedure but the difficulties are appreciated.

#### B.4 Recommendations on the use of ICD in hospital care in relation to ICD-9

B.4.1 The routine use of the morphology code in hospital care data systems should be encouraged. The information from the laboratory designation of morphological type will usually be in the patient's case notes.

B.4.2 When the patient is treated for late effects of a condition, the code for the main condition should be that for the nature of the late effect. "Late effects of ...." should be a supplementary code.

B.4.3 Shortcomings in the Special Tabulation Lists provided in ICD-9 should be reported to WHO.

B.4.4 Any case of doubt in applying the morbidity selection rules should be reported to WHO and a workshop be organized in three to four years' time to resolve the difficulties.

B.4.5 WHO should issue guidance on coding in cases of a suspected condition not being confirmed on investigation.

#### B.5 Recommendations for ICD-10 related to its use for hospital statistics

B.5.1 It is important that in any revision of ICD-9 the committee should not restrict itself by thinking only of the traditional structure of disease classification, and the hospital group recommends that consideration should be given to developing:

- standard basic nomenclature dictionary;
- supplementary codes for special and national levels; and
- classification of modular construction to meet different requirements, while preserving compatibility.

B.5.2 There should be development of uniform classification for registers and these should be compatible with the final structure of ICD-10.

B.5.3 Supplementary classification of external factors should be radically reviewed and developed to make them more useful for preventive programmes. The existing classifications of accidents should be reviewed and these should be compatible with industrial classifications.

B.5.4 Staging of cancers should be provided for in ICD-10, possibly by means of 5th or 6th digits or a supplementary code.

B.5.5 Future needs beyond ICD-10 should be borne in mind. These are likely to relate particularly to prevention statistics.

B.5.6 Appropriate Special Tabulation Lists for hospital care statistics should be provided.

C. Comments and recommendations in relation to primary health care statistics

C.1 Frame of reference

C.1.1 The area of primary health care (PHC) was divided for this discussion into four parts:

- (a) Primary health care in narrow sense, such as:
  - primary health centres
  - primary care or district doctors
  - maternity and child health services
  - different nursing services
- (b) Specially oriented PHC services, such as:
  - occupational health units
  - dispensaries for tuberculosis, venereal diseases, etc.
  - school health services
- (c) Outpatient services usually requiring referrals, such as:
  - polyclinics
  - outpatient departments
- (d) PHC-oriented research
  - health service research
  - interview surveys

C.1.2 The common property of these areas in relation to codes and coding is that the patient/service contact is very short and little time can be devoted to coding and related tasks. The diagnosis is only a preliminary one. The quality of information varies from very exact entities (such as broken bones) to very imprecise ones (such as tiredness, headache, etc.).

C.2 General comments

C.2.1 The purpose for which the information is collected influences the coding and code systems. ICD-9 is, generally speaking, a flexible core which can be easily adapted and elaborated to serve very different purposes in PHC.

C.2.2 The shortcomings in statistical routines and even ad hoc studies are usually not due to limitations of ICD. In the PHC area international comparability is not, in practice, so central a question as in mortality statistics and hospital morbidity coding. In a few disease entities, international comparisons are available and are useful. Many conditions have more importance as national problems.

C.2.3 The ICD code system, especially in PHC, has to serve two rather different purposes. It should be helpful for clinical work including clinical research, and should also facilitate efficient management and serve administrative purposes including planning. The same disease problems can be weighted very differently according to the point of view.

C.2.4 Lack of motivation seems to be a special problem in this area. Many data systems fail because the basic informants do not see the value of possible statistical series. The purposes should be very clear and sound, otherwise the complicated coding can be presented as the reason for not properly filling in the basic forms.

### C.3 Coding processes and organizational structure

C.3.1 Countries can be divided into two groups in relation to the coding processes.

C.3.2 In some countries most of the coding is done in special units where specialized staff have the responsibility to guide and advise a number of coding clerks who have no medical or other health-related educational background.

C.3.3 Other countries rely mainly on the basic coding of providers of services. Doctors or other personnel write the codes which are cursorily inspected before the data are processed.

C.3.4 There are pros and cons for both systems, but few studies have been made of reliability. Such organizational principles influence the whole process and even the principles of classification. If doctors are personally coding, many clinically important details are taken into account without special guidelines or training. Considerable effort is needed to ensure that a coding office is functioning properly. Very often limited attention is given to this type of problem when introducing ICD codes.

### C.4 Some weaknesses and problems

C.4.1 ICD-9 contains some errors, omissions, contradictory statements, etc., in the published classification. Although some of these may have been corrected by amendment sheets, these had not reached most of the participants.

C.4.2 Compared with the ICD-8, chapter XVI is smaller and chapters V and XIII have tended to grow. The chapter on psychiatric diseases presents problems in its use and much guidance is required to obtain reliable results.

C.4.3 It was felt that too little attention has been devoted to the problem of making ICD-8 and ICD-9 comparable and to facilitate the smooth and controlled introduction of the new code system. This should be taken into account in ICD-10.

C.4.4 ICD-9 offers the possibility to use etiology (dagger) or manifestation (asterisk) as the basis of classification. There was some disagreement concerning which was relevant in PHC. When the coding is done by coding clerks, the manifestation might be a more sound basis. If the doctors themselves code, the etiology might be more relevant.

### C.5 Developmental strategies

C.5.1 Specific additional classifications are needed. The group stressed that these should form a "family" and all of them should have an interface with ICD-9.

C.5.2 Problems in the PHC area are rather specific and the international classifications can serve more as models or examples than finalized classifications to be taken as such into use in Member States.

C.5.3 Health problems change with time and the classification should have open places into which additional categories can be fitted.

C.5.4 The group noted a proposal for a supplementary classification of occupational diseases to be part of the ICD-9 family. Its importance was noted. It was remarked that many items already exist in the standard ICD-9 and that the interrelationship between the work and the health problem might be only assumed; this is true of many other problems in PHC.

C.5.5 In the area of PHC there are very different types of contacts. Many other groups of personnel besides physicians have direct contacts, for many different reasons. A WHO group is developing a coding system for reasons of contact. An international code which satisfies all needs at the level of Member States may become too complicated and detailed.

### C.6 Codes in PHC-oriented research

C.6.1 There is a need to align statements of lay reporters of health problems with ICD categories. The way in which this is done should preserve continuity with previous work of this nature.

C.6.2 Even where much of the information is imprecise and incomplete, ICD can be used as the basis for coding and preservation of results. This is because the use of ICD is a unifying element which

makes it possible to have a general overview of a problem from different standpoints. This makes estimations more reliable and useful in practice. Without the linkage to ICD, results tend to be isolated and not comparable with information coming from other sources, etc.

C.6.3 The existence of the WONCA classification (ICHPCC-2), the British RCGP - OPCS Diagnostic Classification which is an extension of it, and a similar Swedish classification, were noted. They are used at present mainly for family practitioner visits and consultations and their suitability in other forms of PHC is not known.

#### C.7 Conclusions and recommendations in relation to the use of ICD in primary health care

C.7.1 ICD-9 is in many respects well applicable to the PHC area. Guidelines should be developed for dealing with any remaining omissions and errors which are critical for the PHC area.

C.7.2 There is a need to think very carefully how to introduce ICD-10. The basic principles, way of thinking, reasons for priorities and weights given to various aspects should be openly stated. The users' education needs more attention. Special material and advice are needed for doctors who code directly and for those who rely on coding clerks. Training courses are suitable for coding clerks whilst guidelines, etc. may be more appropriate for doctors who code. ICD-10 should not be a textbook but should contain some background information. References to other systems could be useful.

C.7.3 ICD-9 does not pay enough attention to prevention or to administrative aspects of disease problems. ICD-10 should be more balanced so that clinical, preventive and operational (managerial) aspects are taken into account, or the classification can be modified in these directions according to needs.

C.7.4 International comparability is important only in some areas of PHC. As far as infectious diseases are concerned, countries should be able to include in any short coding list only those conditions relevant in their area. Topics where international comparability is important are environmental problems, toxic agencies, genotoxic substances, occupational diseases, etc. Special attention should accordingly be devoted to these types of problem when establishing additional classifications for ICD-9 and when ICD-10 is developed.

C.7.5 Dagger and asterisk alternatives both have their merits from the PHC point of view, but the etiological coding might be more relevant for preventive purposes.

C.7.6 In future developments, lifestyle questions and behavioural diseases may be central for purposeful health policy. They should be seen as environmental problems in a broad sense and taken into account when ICD is developed in future.

C.7.7 The accident classifications and E codes need rethinking and updating, to take account of some accident mechanisms on which attention is now focused, especially home accidents.

C.7.8 From the PHC point of view, the reasons for visits or contacts are an important item of information.

C.7.9 Lay reporting is one solution which, especially in developing countries, can solve information collection problems. ICD-10 should take this into account and facilitate pragmatic local adaptations. The element which links ICD-10 and lay reporting code systems should be well-balanced short lists.

C.7.10 The timing of introduction of ICD-10 needs more attention. Guidelines for the introduction, examples, etc., should be available even before the finalized ICD-10. Member States should have time for translation, training, etc.

C.7.11 Maybe the most important conclusion was that the Group expects ICD-10 to be thoroughly planned, and any proposed radical changes carefully tested. From the PHC point of view, it should, in principle, be constructed in such a way that there are versions at different levels of sophistication. They must have a common core but each user should be able to select a relevant level of sophistication.

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